

Abstract Submitted
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On non-equilibrium atmospheric pressure plasma jets and plasma bullet¹ XINPEI LU, CEEE, Huazhong Univ. Sci. Technol. — Because of the enhanced plasma chemistry, atmospheric pressure nonequilibrium plasmas (APNPs) have been widely studied for several emerging applications such as biomedical applications. For the biomedical applications, plasma jet devices, which generate plasma in open space (surrounding air) rather than in confined discharge gaps only, have lots of advantages over the traditional dielectric barrier discharge (DBD) devices. For example, it can be used for root canal disinfection, which can't be realized by the traditional plasma device. On the other hand, currently, the working gases of most of the plasma jet devices are noble gases or the mixtures of the noble gases with small amount of O₂, or air. If ambient air is used as the working gas, several serious difficulties are encountered in the plasma generation process. Amongst these are high gas temperatures and disrupting instabilities. In this presentation, firstly, a brief review of the different cold plasma jets developed to date is presented. Secondly, several different plasma jet devices developed in our lab are reported. The effects of various parameters on the plasma jets are discussed. Finally, one of the most interesting phenomena of APNP-Js, the plasma bullet is discussed and its behavior is described. References: [1] X. Lu, M. Laroussi, V. Puech, Plasma Sources Sci. Technol. 21, 034005 (2012); [2] Y. Xian, X. Lu, S. Wu, P. Chu, and Y. Pan, Appl. Phys. Lett. 100, 123702 (2012); [3] X. Pei, X. Lu, J. Liu, D. Liu, Y. Yang, K. Ostrikov, P. Chu, and Y. Pan, J. Phys. D 45, 165205 (2012).

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